

ABSTRACT OF THE DISCLOSURE

A semiconductor device includes a first conductivity type semiconductor substrate, a vertical unit cell and a separating member. The unit cell includes a second conductivity type semiconductor layer and two first conductivity type semiconductor layers to interpose the second conductivity type semiconductor layer from both side surfaces. A pn junction boundary between the second and first conductivity type semiconductor layer is substantially vertical to the main surface of the semiconductor substrate. A second conductivity type base layer on an upper surface of the second conductivity type semiconductor layer has an impurity concentration higher than the second conductivity type semiconductor layer. A first conductivity type source diffusion layer is on a surface of the base layer. A gate insulating film is formed on the base layer interposed between the source diffusion layer and the first conductivity type semiconductor layer. A gate electrode is formed on the gate insulating film.